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HEAT ACTIVATED PEELABLE RESEALABLE LABELS FOR CLOSURES

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ABSTRACT OF THE DISCLOSURE

A resealable packaging material having an impermeable flexible sheet coated on one side with a permanently tacky adhesive, the adhesive being covered by a porous coating through which the adhesive will migrate on the application of heat so that the package can be sealed and resealed as often as desired.

This invention relates to a heat sealable sheet material which may be used as packaging material, tapes, labels and the like such as those used for protecting perishable goods from the atmosphere.

The heat sealable materials presently used generally consist of sheet material which bears a thermoplastic composition on one surface. One example of an application is where the product is wrapped in a flexible protective sheet material and the end folds of the resulting package are secured by the heat sealable sheet material in the form of labels which are applied by heat and pressure. The principal disadvantage of this type of label is that when it is sealed to the package by means of heat and pressure the coating composition forms a permanent bond, the label is either difficult or impossible to remove without destroying and once removed cannot be used again to readily reseal the package. Consequently once the package is opened and after a portion of the contents removed, it cannot be readily resealed to protect the remainder of the contents which may be susceptible to damage by exposure to the atmosphere.

It is an object of this invention to provide a heat sealable sheet material which does not form a permanent bond with the sheet to which it is attached so that it may be readily removed from the package and which may be used several times to reseal the package.

It is another object of this invention to provide a heat sealable peelable resealable sheet material which may be applied by all automatic thermoplastic label applying equipment standard in the packaging industry.

It is a further object of this invention to provide a heat-sealable peelable resealable sheet material which will form a firm bond to all the various packaging materials commonly in use in the packaging of perishable goods in order to prevent release under a wide range of conditions such as freezer storage and hot summer weather.

It is a further object of this invention to provide a heat-sealable, peelable, resealable sheet material which is nonblocking when stored in rolls or stacks at temperatures no higher than 120° F.

Further objects and advantages of this invention will become apparent from reading the following detailed description.

The heat-sealable, resealable sheet material of this invention consists of a flexible sheet material on one side of which is applied a coating of an essentially permanently tacky composition which is inactive at normal room temperatures. Over this film is applied a flexible porous covering. This covering material may consist of a contiguous layer of porous cellulose fibre, such as porous

tissue paper or an inert powder, such as talc or corn starch. As it is inactive at normal temperatures the composition will not filter through the porous covering.

The coating composition used is characterized in that it becomes activated at a relatively low temperature of about 200 to 225° F. where it undergoes a considerable change in viscosity, which enables it to filter through the porous covering. Upon subsequent cooling to room temperatures or temperatures even below freezing it continues to retain its tackiness so that it will form a firm bond to any of the flexible packaging materials such as paper, polyethylene film, metal foil and the like, commonly used in the packaging of perishable goods. The tacky nature of the coating is such that the sheet may be peeled away repeatedly from the packaging material and reapplied at will with finger pressure so as to give a firm bond again. The coating composition has excellent stability while maintained in the molten condition during the original coating operation, during storage, and when being utilized in its packaging capacity.

The porous covering is chemically inert to the coating composition and is applied to prevent blocking when the coated sheet material is stored such as in roll forms or in stacks. Blocking will not occur at ordinary storage temperatures. Any flexible inert covering which is penetrable to the coating compositions may be used.

The coating composition used is characterized by its essentially permanently tacky nature and its relatively low viscosity at the temperatures at which the sealing sheet is originally applied. Such a coating comprises ingredients of resinous and plasticizing nature. Such ingredients are exemplified by ester gums and synthetic resins such as polybutene. Rubbery material and wax may be included as well.

The following are two typical formulations of the coating composition used, however, it is understood that the formulations may be varied without departing from the spirit of the invention.

FORMULATION A

Ingredients:	Percentage of composition by weight
Butyl rubber	19
Chlorinated polyphenyl resin	39
Glycerol ester of hydrogenated rosin	36
Microcrystalline wax	6

FORMULATION B

Ingredients:	Percentage of composition by weight
Butyl rubber	8
Ethylene glycol ester of hydrogenated rosin	42
Polybutene	25
Microcrystalline wax	23
Paraffin oil, C.P. grade	2

A butyl rubber useful in this coating is Polysar Butyl 301 (trademark of Polymer Industries Ltd.). The microcrystalline wax may be, for example, Bareco 190 (trademark of Union Oil Company of California) or ML.445 (trademark of L. Sonneborn). A typical chlorinated polyphenyl resin is Aroclor 1262 (trademark of Monsanto), a glycerol ester of hydrogenated rosin is Staybelite Ester No. 10 (trademark of Hercules Powder Co.) and an ethylene glycol ester of hydrogenated rosin is Staybelite Ester No. 1 (trademark of Hercules Powder Co.). The polybutene is of the type exemplified by Oronite No. 32 (trademark of Oronite Chemicals).

The ingredients of the coating composition are blended together in a steam jacketed mixing kettle until a homogeneous mixture is obtained. The resulting mixture is

then applied on one side of a flexible sheet material such as foil, paper, polyethylene film and the like by any one of the well known methods of application. The inventors have found that a good quantity of coating is approximately 15 lbs. of coating per 3,000 square feet of sheet surface. Immediately after the thermoplastic coating is applied to the sheet surface, it is chilled to 120° F. or below by passing the coated flexible sheet over a chill roll. Immediately after cooling the coating, the porous covering is applied. This porous covering may be a continuous web of porous tissue paper, such as an 8½ lb. basis weight (24 x 36 x 500) tissue. This tissue is applied to the surface of the coating by passing the coated flexible web and the sheet of tissue paper between a pair of pressure laminating rolls, which iron the tissue paper on to the tacky surface of the coating. As an alternative to using porous tissue paper a very thin layer of powdered material, such as, talc or corn starch which will adhere to the tacky surface of the coating may be applied to the coating on the flexible sheet material by dusting. It is essential that the temperature of coated sheet material be low enough so that the viscosity of the coating is such that it does not penetrate or bleed through the open pores of the covering when the covering is being applied.

The coated sheet material produced as described above may be used as sealing material in many forms such as tape, labels, wrapping material and the like. It may be used for example, to produce a sealable flap on bags, boxes and other containers or as the end labels to be applied to the end folds of a wrapper such as of bread wrappers. The coated flexible sheet material is applied by heat and pressure such as supplied by the standard label applying equipment used in the packaging industry. The temperature for applying the seal should be at about 200 to 225° F. The coating material will undergo a considerable reduction in viscosity and will filter through the pores in the covering and will form a bond with the flexible protective sheet material used to make the package. The coated sheet material applied in this way may then be peeled away repeatedly and resealed to the end folds of the package by means of simple finger pressure.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A heat activated peelable-resealable sheet comprising a flexible impermeable sheet coated on one side with a film of permanently tacky adhesive, said adhesive being characterized by high viscosity and nonmigrating at normal room temperatures and low viscosity at heat sealing temperatures and a flexible porous member covering said adhesive film and chemically inert thereto; said porous member being permeable to the permanently tacky adhesive at heat sealing temperatures to permit migration therethrough whereby when the porous surface is placed on another surface and sealing heat is applied thereto the two surfaces are releasably joined together by the permanently tacky adhesive and capable of detaching and resealing without additional heat treatment.

References Cited

UNITED STATES PATENTS

2,142,039	12/1938	Abrams et al.	
2,278,673	4/1942	Savada	161—406
2,444,830	7/1947	Kellgren et al.	161—406
2,474,619	6/1949	Farrell et. al.	161—160
2,484,060	10/1949	Wing.	

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